

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-16. (Canceled)

17. **(Currently Amended)** An onboard terrain anticollision device for an aircraft, comprising:

a memory including topographic data of the terrain and/or of the obstacles overflown; and

an information processing apparatus comprising:

an input configured to receive flight parameters;

a first trajectory prediction unit configured to establish, on the basis of said flight parameters, at least a first safety surface corresponding to a first predicted trajectory, the first safety surface having a first flight duration and being bounded laterally by a first left limit and a first right limit, said first right and left limits being defined essentially by a first lateral margin and at least a first angle of left lateral aperture and at least a first angle of right lateral aperture;

a first topographic calculation unit configured to establish, on the basis of said flight parameters, at least a first topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a first comparison unit configured to compare said first safety surface and

the first topographic surface for determining at least one first risk of collision of the aircraft with the ground corresponding to the first flight duration;

a second trajectory prediction unit configured to establish, on the basis of the flight parameters, a second safety surface corresponding to a second predicted trajectory, the second safety surface having a second flight duration lesser than the first flight duration and being bounded laterally by a second left limit and a second right limit, said second right and left limits being defined essentially by a second lateral margin and at least a second angle of left lateral aperture and at least a second angle of right lateral aperture;

a second calculation unit configured to establish, on the basis of the flight parameters, a second topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a second comparison unit configured to compare said second safety surface and the second topographic surface for determining a second risk of collision of the aircraft with the ground corresponding to the second flight duration;

a third trajectory prediction unit configured to establish, at least on the basis of the flight parameters, a third safety surface corresponding to a third predicted trajectory, the third safety surface having a third flight duration greater than the first flight duration and being bounded laterally by a third left limit and a third right limit, said third right and left limits being defined essentially by a third lateral margin and at least a third angle of left lateral aperture and at least a third angle of right lateral aperture;

a third topographic calculation unit configured to establish, at least on the basis of said flight parameters, a third topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a third comparison unit configured to compare said third safety surface and the third topographic surface for determining at least one third risk of collision of the aircraft with the ground corresponding to the third flight duration;

and

an alarm unit linked to said information processing apparatus and configured to generate:

a first alarm being a vertical avoidance alarm when the first risk of collision is avoidable by a simple vertical avoidance maneuver; [[and]]

a second alarm being a traverse avoidance alarm when the second risk of collision is not avoidable by a simple vertical avoidance maneuver; and

a prealarm for indicating a potential collision according to the determined third risk of collision.

18. **(Canceled)**

19. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the second flight duration has a duration of less than 3 seconds.

20. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first alarm is of the vertical avoidance alarm type and the second

alarm is of the transverse avoidance alarm type, the vertical avoidance alarm corresponding for the pilot to a vertical avoidance maneuver and the transverse avoidance alarm corresponding for the pilot to a transverse avoidance maneuver.

21. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first or the second safety surface comprises two parts:

a first part corresponding to a first flight time (T_1), dependent on a prediction of the trajectory in progress calculated on the basis of an origin (O) taken under the aircraft; and

a second part corresponding to a second flight time (T_2) following the first flight time, dependent on a prediction of a vertical avoidance trajectory.

22. (Previously Presented) The onboard terrain anticollision device as claimed in claim 21, wherein the parameters defining the first part or the second part of the second safety surface can be substantially different from the parameters defining those of the first safety surface.

23. (Canceled)

24. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first lateral margins or the first angles of right and left lateral aperture are substantially different from the second lateral margins or from the second angles of right and left lateral aperture of the limits.

25. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein at least one of the first comparison unit or second comparison unit comprise a criticality indicator of the risk of collision with the terrain.

26. (Previously Presented) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the first or the second topographic surface situated above the first or the second safety surface.

27. (Previously Presented) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the first or the second topographic surface and [[the]]a terrain height situated above the first or the second safety surface.

28. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the alarms are of audible or visual type.

29. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the information processing apparatus further comprise an alarm management unit configured as a function of the evolution of the risks of collision with the terrain.

30. (Previously Presented) The onboard terrain anticollision device as claimed in claim 29, wherein the alarm management unit comprises a device configured to switch

the first and the second alarms.

31. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the switching is performed when the trajectory of the aircraft has evolved noticeably.

32. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the evolution of the trajectory of the aircraft is a change of the slope or of the roll or of the heading of more than a few degrees.

33. **(Currently Amended)** The onboard terrain anticollision device as claimed in ~~claim 18~~ claim 17, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds.

34. (Previously Presented) The onboard terrain anticollision device as claimed in claim 19, wherein the first flight duration is no greater than 8 seconds.

35. **(Currently Amended)** A method of operating an onboard terrain anticollision device for an aircraft, comprising:

receiving flight parameters;

establishing, on the basis of said flight parameters, a first safety surface corresponding to a first predicted trajectory, the first safety surface having a first flight

duration;

establishing a first topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

comparing the first safety surface and the first topographic surface for determining a first risk of collision;

establishing, on the basis of the flight parameters, a second safety surface corresponding to a second predicted trajectory, the second safety surface having a second flight duration lesser than the first flight duration;

establishing a second topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

comparing said second safety surface and the second topographic surface for determining a second risk of collision;

establishing, on the basis of said flight parameters, a third safety surface corresponding to a third predicted trajectory, the third safety surface having a third flight duration greater than the first flight duration;

establishing a third topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

comparing the third safety surface and the third topographic surface for determining a third risk of collision;

generating a first alarm being a vertical avoidance alarm when the first risk of collision is avoidable by a simple vertical avoidance maneuver; [[and]]

generating a second alarm being a traverse avoidance alarm when the second risk of collision is not avoidable by a simple vertical avoidance maneuver; and

generating a third alarm for indicating a potential collision according to the determined third risk of collision.

36. **(Canceled)**

37. **(Currently Amended)** The method of ~~claim 36~~ claim 35, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds .